

Patent claims

1. A method for the arbitrarily selectable scaling of input images represented by pixels and/or subpixels arranged line by line and column by column, wherein selected pixels and/or subpixels which are intended for reproduction in the output images are determined in the input image, the respective column-by-column and/or line-by-line distance of which being dimensioned in such a way as to achieve a rational scaling ratio of input image to output image at least over a range of a line and/or of a column by calculation of integer distances between successive selected pixels and/or subpixels of the input image with minimal variation between the distances.
2. The method as claimed in claim 1, wherein the selected pixels and/or subpixels of the input image are used as support points which, in the output image, are allocated a pixel and/or subpixel which is calculated or selected from a plurality of pixels and/or subpixels of the input image which precede or succeed the support point.
3. The method as claimed in claim 2, wherein the preceding or succeeding pixels and/or subpixels of the input image in a range up to the respectively adjacent support point are used for the calculation.
4. The method as claimed in claim 1, wherein a value representing the scaling ratio is fed as addend to an adder, wherein the addition of the addend is performed for each pixel and/or subpixel line by line and/or column by column and, in the case where a threshold value is exceeded, a support point is marked at the current pixel and/or subpixel, and wherein, after the marking of a support point, a value corresponding to the threshold value is subtracted from the content of the adder.

5. The method as claimed in claim 4, wherein the exceeding of the threshold value is signaled by the state change of a selected bit in a binary adder.
6. The method as claimed in claim 5, wherein the subtraction of the threshold value is performed by continued addition and disregarding of the overflow of the binary adder.
7. The method as claimed in one of the preceding claims 1 to 6, wherein successive lines and/or columns are processed with an offset by whole pixels and/or subpixels.
8. A scaling circuit for the arbitrarily selectable scaling of images represented by pixels and/or subpixels arranged line by line and column by column, having a microprocessor, a program memory and a main memory, and also input means for scaling ratios, wherein a method as claimed in one of claims 1 to 6 is executable in program-controlled fashion.
9. The method as claimed in claim 8, wherein successive lines and/or columns are processed with an offset by whole pixels and/or subpixels.
10. A scaling circuit for the arbitrarily selectable scaling of images represented by pixels and/or subpixels arranged line by line and column by column, having adders, in which values representing a scaling ratio can be added for each pixel and/or subpixel in lines or columns, respectively, input means for scaling ratios, a comparator for the lines or columns, respectively, which signals the exceeding of a threshold value by the addition, a first multiplexer, by means of which the pixels and/or subpixels of a line can be allocated values, a second multiplexer, by means of which the pixels and/or subpixels of a column can be

allocated values and a memory for storing the values for pixels and/or subpixels for lines and/or columns.

11. The scaling circuit as claimed in claim 10, wherein means are provided for storing selected bit positions of the adder and means for comparing successive contents at the selected bit positions, wherein an exceeding of the threshold value is identifiable on the basis of a state change of successive contents at the selected bit positions of the adder.
12. A film scanner with a drive for a control monitor, wherein a scaling circuit as claimed in claim 8 is provided.
13. A film scanner with a drive for a control monitor, wherein a scaling circuit as claimed in claim 9 is provided.
14. A film scanner with a drive for a control monitor, wherein a scaling circuit as claimed in one of claims 10 or 11 is provided.